

DESCRIPTIONS OF NEW SPECIES OF THE LYCOSIDAE (ARANEAE) FROM JAPAN

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Synopsis

TANAKA Hozumi (Biological Laboratory, Konko Daiichi Senior High School, Takatsuki, Osaka, 569 Japan); Descriptions of new species of the Lycosidae (Araneae) from Japan. *Acta arachnol.*, 33: 51-87 (1985).

In this paper are given the descriptions of the following 13 new species of the Lycosidae from Japan: *Pirata yesoensis*, *Trochosa aquatica*, *Arctosa fujiii*, *A. hikosanensis*, *A. kawabe*, *Alopecosa moriutii*, *A. hokkaidensis*, *Pardosa agraria*, *P. diversa*, *P. graminea*, *P. okinawensis*, *P. umida*, and *P. suwai*.

This study is based on a dissertation submitted by me in March, 1982, to the University of Osaka Prefecture in partial fulfillment of the requirements for the Degree of Doctor of Agriculture. In the thesis entitled 'A Revision of the Family Lycosidae (Araneae) of Japan', 66 Japanese lycosid species were dealt with and 13 species of them were described as new to science. In the present paper, descriptions of these 13 new species are given. Of these species, one belongs to *Pirata*, one to *Trochosa*, three to *Arctosa*, two to *Alopecosa*, and six to *Pardosa*.

The types are preserved in the collection of the Entomological Laboratory, College of Agriculture, University of Osaka Prefecture, Sakai.

Before going further, I wish to express my hearty thanks to Dr. S. MORIUTI, of the University of Osaka Prefecture, who gave me kind guidance in this study and preparing the present descriptions, and to Prof. T. YAGINUMA, Ohtemon Gakuin University, who offered valuable specimens and read the original manuscript. My thanks are also due to Miss. C. OKUMA, and Messrs. T. ARITA, Y. CHIKUNI, Y. FUJII, A. FUKUSHIMA, K. KAIHOTSU, Y. KUDO, T. MAEDA, S. MATSUMOTO, M. MIZUSAWA, Y. NISHIKAWA, S. NISHIKI, J. SAGARA, H. SAITO, Y. SUGANAMI, M. SUWA, B. TAKEI, T. YAMANO, N. YASUDA, H. YOSHIDA for the material of the present paper.

Pirata yesoensis n. sp.

(Figs. 1-4)

[Japanese name: Ashiguro-komorigumo]

Female (Holotype)

Measurements (mm). Total length 3.96. Carapace length 2.12, width 1.60. Abdomen length 1.84, width 1.36.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.60	2.00	1.24	0.72	5.56
II	1.48	1.76	1.20	0.72	5.16
III	1.40	1.68	1.36	0.68	5.12
IV	2.04	2.44	2.24	0.92	7.64
Palp	0.68	0.84	—	0.56	2.08

Carapace yellowish brown, with dark brown markings and a very narrow dark brown line along margin; V-shaped mark distinct, greyish brown; yellow lateral bands separated from margins by dark brown bands. Anterior eye row shorter than posterior median row; diameter of anterior median eye almost as large as anterior lateral eye; anterior median eyes separated from each other and from lateral eyes by about half the diameter of median eye; anterior eye row procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus brown, almost as large as the diameter of anterior median eye. Chelicera, maxilla and labium yellowish brown; chelicera with three teeth in retromargin. Sternum uniformly light yellowish brown. Abdomen yellowish brown, with blackish grey markings on dorsal and lateral surfaces; a lanceolate median mark distinct; ventral surface light yellowish brown. Legs yellowish brown, except for black patella and tibia I. Palp yellowish brown; tarsus with two claws. Epigynum with a pair of oval structures at basal part and with large, round spermathecae which are seen through body wall at apical part (Fig. 1); paired spermathecae, the basal one of which is round, and the apical one is oval, as shown in Fig. 2.

Male (Paratype 1)

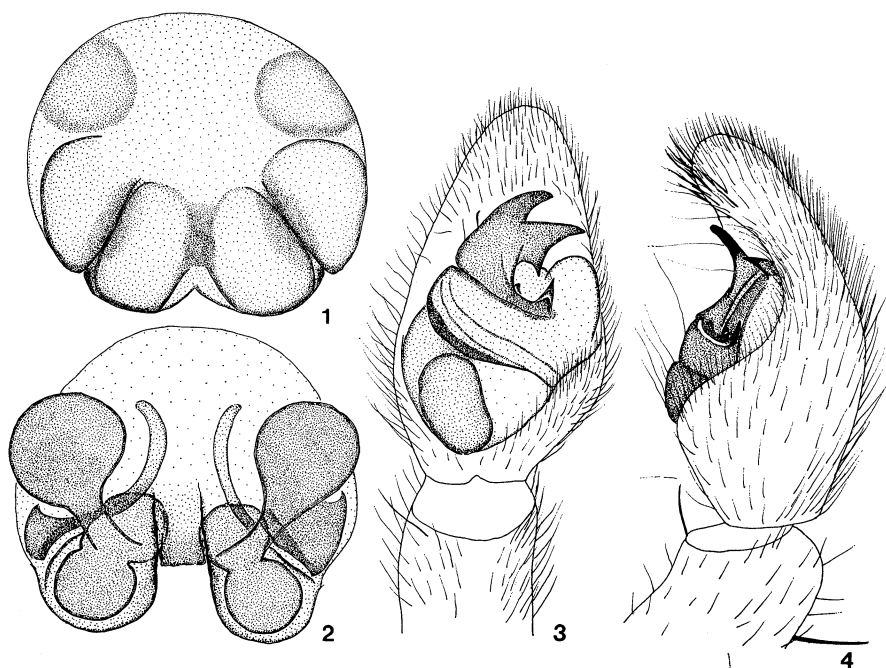
Measurements (mm). Total length 4.16. Carapace length 2.16, width 1.56. Abdomen length 2.00, width 1.28.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.64	2.04	1.32	0.80	5.80
II	1.52	1.72	1.24	0.72	5.20
III	1.32	1.64	1.28	0.68	4.92
IV	1.92	2.48	2.12	0.88	7.40
Palp	0.80	0.84	—	0.72	2.36

Similar to the female holotype, but differs from it in the palp dark yellowish brown and in the tarsal organs with forked median apophysis (Figs. 3 & 4); tarsus with no claws.

Variation: Total length ♀ 3.90–5.85, ♂ 3.60–4.20. Carapace length ♀ 1.85–2.20, ♂ 1.90–2.20; width ♀ 1.40–1.65, ♂ 1.30–2.00. Abdomen length ♀ 1.80–3.65, ♂ 1.60–2.00; width ♀ 1.35–2.55, ♂ 1.05–1.30.

Holotype: ♀, and paratype 1: ♂, Sapporo, Hokkaido, Japan, 3. VIII. 1979 (H. TANAKA).



Figs. 1-4. *Pirata yesoensis* n. sp. 1. Female epigynum (ventral view). 2. Female epigynum (dorsal view). 3. Male palp (ventral view). 4. Male palp (retrolateral view).

Paratypes: Hokkaido-2♀, Sapporo, 1. IX. 1974 (F. KOMAI); 10♀, same locality, 26-29. IX. 1974 (M. SUWA); 10♀, 10♂, same locality, 26. VI. 1975 (M. SUWA); 27♀, 1♂, same data as holotype.

Distribution: Japan (Hokkaido).

Biological notes: This species lives at damp areas among grasses in fields. Mature females appear from late in June to September and males from June to August. The formation of egg sacs are found from August to September. The number of eggs is 30 in one egg sac on the average.

Remarks: This species is allied to the Japanese *P. tanakai* BRIGNOLI (= *P. exiguus* TANAKA, preoccupied by BANKS (1892)) structurally, but is easily distinguished from the latter by the presence of black markings on patella and tibia I in both sexes.

Trochosa aquatica n. sp.

(Figs. 5-8)

[Japanese name: Nagazukin-komorigumo]

Female (Holotype)

Measurements (mm). Total length 5.60. Carapace length 2.90, width 2.20. Abdomen length 2.70, width 1.80.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.00	2.50	1.30	1.10	6.90
II	1.90	2.30	1.30	1.10	6.60
III	1.70	2.10	1.50	1.00	6.30
IV	2.40	2.90	2.50	1.20	9.00
Palp	1.10	1.00	—	0.70	2.80

Carapace dark brown, with light yellowish brown median and lateral bands; two dark brown bars in light yellowish brown median band distinct. Anterior eye row shorter than posterior median row; anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by about half the diameter of median eye, and from lateral eyes by about the diameter of lateral eye; anterior eye row almost straight; posterior lateral eye row about 1.2 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus dark brown, almost as large as the diameter of anterior lateral eye. Chelicera reddish brown, with

three teeth in retromargin. Maxilla yellowish brown. Labium dark yellowish brown. Sternum light yellowish brown. Abdomen dark grey in dorsal surface, with light yellowish brown markings; a lanceolate median mark distinct; sides yellowish brown, with blackish grey markings; ventral surface light yellowish brown. Legs reddish brown, with indistinct annulations of femora I-IV. Palp uniformly reddish brown; tarsus with two claws. Epigynum with genital openings, of which the outer lines are converging downward and somewhat transversely elongated septum (Fig. 5); helmet-shaped hoods very long and acute at tip as shown in Fig. 6.

Male (Paratype 1)

Measurements (mm). Total length 5.80. Carapace length 3.10, width 2.30. Abdomen length 2.70, width 1.70.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.50	3.10	1.90	1.50	9.00
II	2.20	2.70	1.70	1.40	8.00
III	2.20	2.50	1.90	1.10	7.70
IV	2.80	3.50	3.00	1.50	10.80
Palp	1.30	1.30	—	0.90	3.50

Different from the female holotype as follows: Chelicera with a small excrescence on the outside of the fang. Labium yellowish brown. Legs yellowish brown. Palp: light yellowish brown; tarsal organs (Figs. 7 & 8) with a transverse median apophysis which has a process toward under side; tip of embolus straight; tarsus with one claw.

Variation: Total length ♀ 5.60-9.00, ♂ 5.80-7.65. Carapace length ♀ 2.90-3.50, ♂ 3.10-4.10; width ♀ 2.20-2.50, ♂ 2.25-2.95. Abdomen length ♀ 2.70-5.50, ♂ 2.70-3.55; width ♀ 1.80-3.75, ♂ 1.60-2.25. The body color varies from light yellowish brown to dark greyish brown.

Holotype: ♀, and paratype 1: ♂, Satamisaki, Kagoshima Prefecture, Japan, 29. V. 1971 (H. TANAKA).

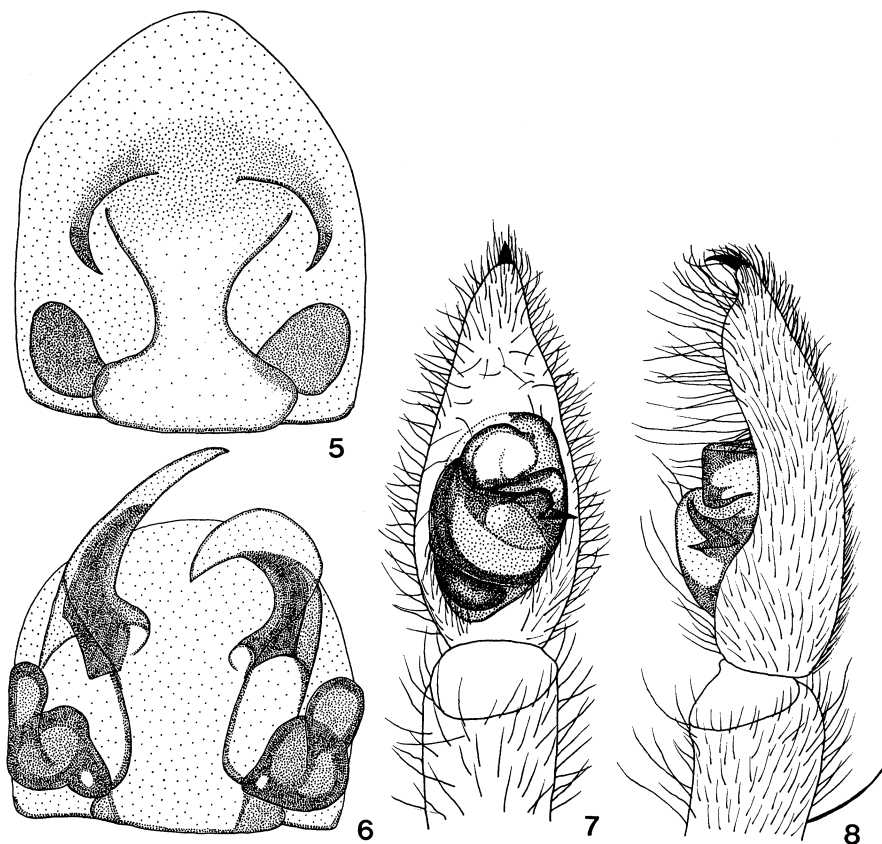
Paratypes: Kyushu- 2♀, 1♂, same data as holotype. 1♂, Oodomari, Kagoshima Pref., 11. VII. 1976 (S. TSUKAGUCHI).

Other material examined: Honshu- 1♀, Toshima, Izushichito, Tokyo, 18. VII. 1976 (S. HONJO); 1♀, 1♂, Sakai, Osaka Pref., 11. VII. 1970 (H. TANAKA); 1♀, same locality, 19. VIII. 1970 (H. TANAKA).

Distribution: Japan (Honshu and Kyushu).

Biological notes: This spider is found among the dead leaves under trees or in small depressions of paddy fields. Mature spiders are found from May to August. Eggs are unknown.

Remarks: This species is very allied to the Chinese *T. chekiangensis*,* but



Figs. 5-8. *Trochosa aquatica* n. sp. 5. Female epigynum (ventral view). 6. Female epigynum (dorsal view). 7. Male palp (ventral view). 8. Male palp (retrolateral view).

* *T. chekiangensis* was originally described by SONG, DAN, WANG, CHENG et ZHENG (1978) from Chekiang, China, as a distinct subspecies of *T. ruricola*. I, however, consider it as a good species.

Trochosa chekiangensis SONG, DAN, WANG, CHENG et ZHENG, n. stat., 1978, *Zool. Mag.*, pp. 2-3, Fig. 3 (as a ssp. of *T. ruricola* De GEER).

is easily distinguished from the latter by the presence of the very long and acute helmet-shaped hood in the female epigynum.

Arctosa fujiii n. sp.

(Figs. 9-12)

[Japanese name: Fujii-komorigumo]

Female (Holotype)

Measurements (mm). Total length 6.55. Carapace length 2.85, width 2.25. Abdomen length 3.70, width 2.55.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.95	2.50	1.45	0.80	6.70
II	1.90	2.40	1.45	0.80	6.55
III	1.85	2.30	1.70	0.85	6.70
IV	2.45	3.15	2.70	1.15	9.45
Palp	1.00	1.05	—	0.85	2.90

Carapace reddish brown, with light yellowish brown median band which has two dark brown patches in the anterior part. Anterior eye row shorter than posterior median row; anterior eyes equal in size; anterior median eyes separated from each other by more than half the diameter of median eye, and from laterals by less than half the diameter of median eye; anterior eye row procurved; posterior lateral eye row about 1.4 times in length of posterior median eye row, which is slightly longer than the distance between posterior median and lateral eye rows. Clypeus yellowish brown, subequal to the diameter of anterior median eye. Chelicera reddish brown, with three teeth in retromargin. Maxilla yellowish brown. Labium and sternum dark yellowish brown. Abdomen reddish brown in dorsal surface, with dark markings; a lanceolate median mark very faint; lateral and dorsal surfaces yellowish brown, with dark markings. Legs reddish brown, with distinct annulations on femora and metatarsi. Palp reddish brown, with faint annulations on femur; tarsus with two claws. Epigynum with semicircular septum which has a reddish brown line in center (Fig. 9); two seminal ducts long, and small circular spermathecae present at tips of two seminal ducts as in Fig. 10.

Male (Paratype 1)

Measurements (mm). Total length 5.30. Carapace length 2.75, width 2.10.

Abdomen length 2.55, width 1.60.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.80	2.20	1.65	0.80	6.45
II	1.75	2.40	1.65	0.85	6.65
III	1.85	2.25	1.70	0.80	6.60
IV	2.50	3.20	2.95	1.05	9.70
Palp	0.95	1.00	—	1.05	3.00

Differs from the female holotype in the following characteristics: Carapace dark reddish brown. Abdomen reddish brown; a lanceolate median mark distinct. Legs yellowish brown, except for dark brown coxae, trochanters and femora I-II; femora with faint annulations. Palp having tarsal organs (Figs. 11 & 12) with a dorsally projecting, short broad branch on tegulum; tarsus with no claws.

Variation: Total length ♀ 5.60-8.05, ♂ 5.00-5.75. Carapace length ♀ 2.85-3.30, ♂ 2.65-3.00; width ♀ 2.10-2.55, ♂ 2.00-2.35. Abdomen length ♀ 2.75-4.75, ♂ 2.35-2.80; width ♀ 1.85-3.25, ♂ 1.55-1.75. The diameter of anterior median eye is slightly smaller than that of anterior lateral eye in some individuals.

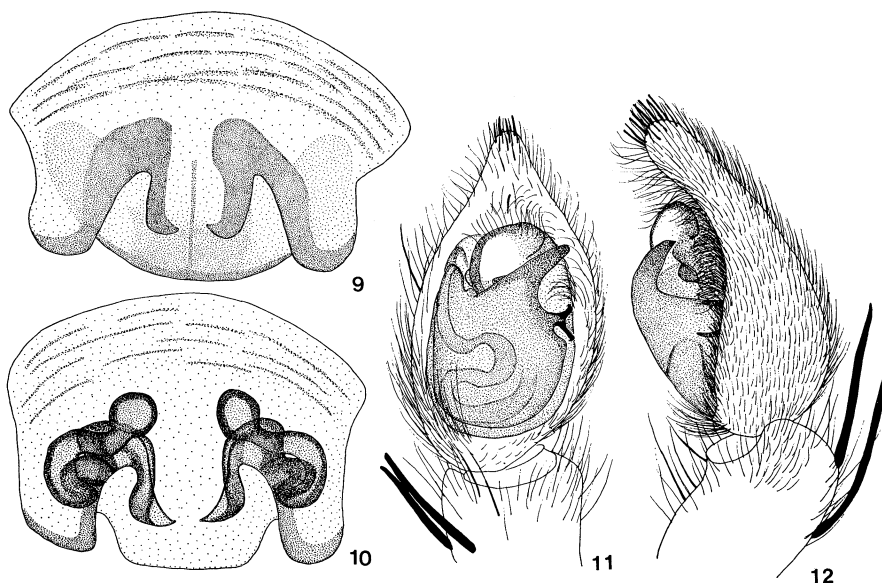
Holotype: ♀, and paratype 1: ♂, Hidaka-cho, Saitama Prefecture, Japan, 21. IV. 1973 (H. TANAKA).

Paratypes: 2♀, 2♂, 1972 (Y. FUJII); 18♀, 20♂, 21. IV. 1973 (H. TANAKA); 3♀, 3♂, 3. V. 1974 (H. TANAKA); 7♀, 21. V. 1976 (Y. FUJII); 10♀, 22. V. 1977 (Y. FUJII). The locality of all paratypes are same as holotype.

Other specimens examined: Honshu- 2♂, Sendai, Miyagi Pref., 20. X. 1973 (Y. NISHIKAWA); 2♂, Gagyusan, Niigata Pref., 15. VIII. 1974 (Y. KUDO); 1♀, Numata, Gunma Pref., 15. V. 1965 (B. TAKEI); 2♂, Hachioji, Tokyo, 13-18. IV. 1971 (S. MATSUMOTO); 2♀, same locality, 28. IV. 1971 (S. MATSUMOTO); 1♂, same locality, 2. IV. 1974 (S. MATSUMOTO); 1♂, Tanzawa, Kanagawa Pref., 5. V. 1969 (S. MATSUMOTO); 1♀, 1♂, Takatomi-cho, Gifu Pref., 8. IV. 1978 (H. NAGAI); 5♂, Tanigumi-mura, Gifu Pref., 16. IV. 1978 (H. YOSHIDA); 1♂, Yari-hara, Mie Pref., 30. V. 1973 (K. KATSURA); 1♂, Kawarada-cho, Mie Pref., 28. III. 1979 (K. KAIHOTSU).

Distribution: Japan (Honshu).

Biological notes: This species mainly lives among wet dead leaves in woodlands. Mature spiders are found from late in March to August. Formation of egg sacs is found from early in May to June. The number of eggs is 50 in one



Figs. 9-12. *Arctosa fujiii* n. sp. 9. Female epigynum (ventral view). 10. Female epigynum (dorsal view). 11. Male palp (ventral view). 12. Male palp (retrolateral view).

egg sac on the average.

Remarks: This species is similar to *A. daisetsuzana* (SAITO) and *A. hikosanensis* n. sp., both of which are found in Japan. From *daisetsuzana* it can be distinguished by a faint lanceolate median mark of dorsal abdomen, by the presence of a small, round spermathecae in the female epigynum (Fig. 10), and by the absence of the projection on the tegulum of the male palp (Figs. 11 & 12). From *hikosanensis* it is easily distinguished by the wider size of the seminal ducts in the female epigynum (Fig. 10), and by the projecting short broad branch on tegulum of the male palp as in Figs. 11 and 12.

***Arctosa hikosanensis* n. sp.**

(Figs. 13-16)

[Japanese name: Hikosan-komorigumo]

Female (Holotype)

Measurements (mm). Total length 6.30. Carapace length 3.10, width 2.50. Abdomen length 3.20, width 2.20.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.20	2.80	1.70	0.90	7.60
II	2.20	2.50	1.70	0.80	7.20
III	2.20	2.50	1.90	0.90	7.50
IV	2.80	3.30	3.20	1.20	10.50
Palp	1.10	1.20	—	0.90	3.20

Carapace reddish brown, with a light yellow median band, which has two dark brown spots in the apical part. Anterior eye row shorter than posterior median row; anterior median eyes roughly equal in length to lateral eyes; anterior median eyes separated from each other and from laterals by less than the diameter of median eye; anterior eye row procurved; posterior lateral eye row about 1.5 times in length of posterior median eye row, which is slightly longer than the distance between posterior median and lateral eye rows. Clypeus reddish brown, nearly equal to the diameter of anterior eye. Chelicera and maxilla light yellowish brown; chelicera with three teeth in retromargin. Labium and sternum dark reddish brown. Abdomen reddish brown in dorsal and lateral surfaces, with dark brown markings; a lanceolate median mark distinct; ventral surface reddish brown. Legs light yellowish brown, with distinct annulations of femora and tibiae I-IV. Palp reddish brown, with faint annulations on femur; tarsus with two claws. Epigynum with a tongue-like septum and a pair of dark processes at anterior lateral sides (Fig. 13); a pair of long and narrow seminal ducts, and circular spermathecae present at tips of seminal ducts (Fig. 14).

Male (Paratype 1)

Measurements (mm). Total length 5.90. Carapace length 2.90, width 2.20. Abdomen length 3.00, width 2.00.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.10	2.80	1.80	0.90	7.60
II	2.10	2.60	1.80	0.80	7.30
III	2.10	2.50	2.00	0.90	7.50
IV	2.80	3.30	3.30	1.10	10.50
Palp	1.10	1.20	—	1.30	3.60

Essentially similar to the holotype, but it differs in the following characteristics: Carapace dark reddish brown. Abdomen reddish brown, with dark brown markings on dorsal surface. Legs dark brown, except for light yellowish brown patellae to tarsi I-II and trochanters to tarsi III-IV; femora I-II with faint

annulations, and femora III–IV with distinct ones. Palp dark brown; tarsal organs (Figs. 15 & 16) with a robust and tapering projection on teglum; tarsus with no claws.

Variation: Total length ♀ 5.60–6.30, ♂ 5.10–6.30. Carapace length ♀ 2.60–3.10, ♂ 2.70–3.10; width ♀ 2.10–2.50, ♂ 2.10–2.40. Abdomen length ♀ 2.90–3.20, ♂ 2.30–3.20; width ♀ 2.20–2.30, ♂ 1.60–2.10. The color varies from light reddish brown to dark yellowish brown. In some individuals, the lanceolate median mark is indistinct.

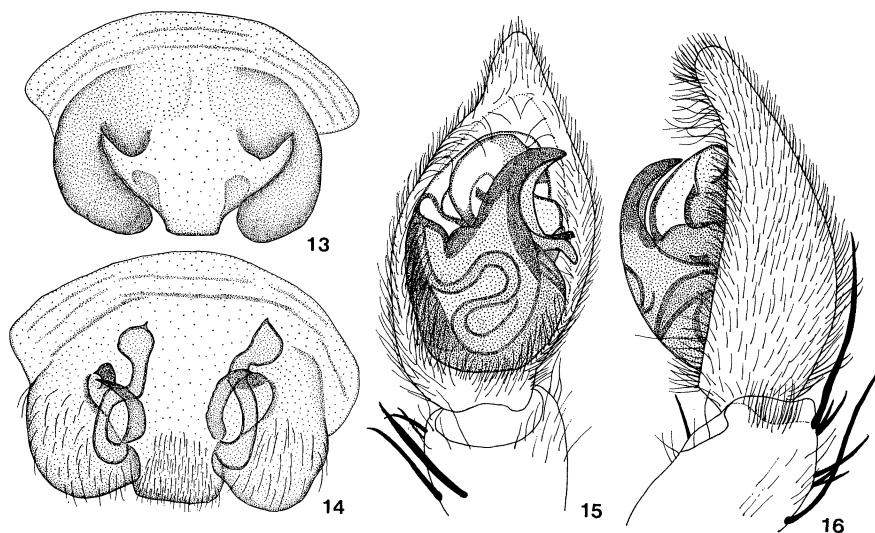
Holotype: ♀, and paratype 1: ♂, Hikosan, Fukuoka Prefecture, Kyushu, Japan, 18–19. IV. 1979 (T. GOTO).

Paratypes: Kyushu- 1 ♀, same locality as holotype, 4–9. VIII. 1958 (C. OKUMA); 1 ♂, same locality, 20–24. V. 1971 (H. TANAKA); 1 ♀, 12 ♂, same data as holotype.

Distribution: Japan (Kyushu).

Biological notes: This species lives among wet dead leaves in woodlands. Mature spiders are found from April to August. The egg sac is unknown.

Remarks: This species is allied to the Japanese *A. fujiii* n. sp.; the distinguishing characteristics are noted in the remarks of the latter species.



Figs. 13–16. *Arctosa hikosanensis* n. sp. 13. Female epigynum (ventral view). 14. Female epigynum (dorsal view). 15. Male palp (ventral view). 16. Male palp (retrolateral view).

Arctosa kawabe n. sp.

(Figs. 17-20)

[Japanese name: Kawabe-komorigumo]

Female (Holotype)

Measurements (mm). Total length 10.05. Carapace length 4.80, width 3.75. Abdomen length 5.25, width 3.55.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	3.75	4.75	3.00	1.60	13.10
II	3.60	4.55	2.90	1.55	12.60
III	3.40	4.00	3.40	1.75	12.55
IV	4.30	5.50	5.00	2.25	17.05
Palp	1.80	1.90	—	1.30	5.00

Carapace yellowish brown, with reddish brown radiating striae. Anterior eye row shorter than posterior median row; anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by about half the diameter of median eye, and from laterals by less than half the diameter of median eye; anterior eye row weakly procurved; posterior lateral eye row about 1.4 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus yellowish brown, almost as large as the diameter of anterior median eye. Chelicera reddish brown, with three teeth in retromargin. Maxilla reddish brown. Labium reddish brown. Sternum yellowish brown. Abdomen yellowish brown in dorsal surface, with dark brown markings; a lanceolate median mark distinct; sides yellowish brown, with dark brown markings; ventral surface yellowish brown. Legs and palp unicolor, yellowish brown; palpal tarsus with two claws. Epigynum with two longitudinal genital openings at central part and small circular ones (Fig. 17); egg-like spermathecae, and short narrow seminal ducts present as in Fig. 18.

Male (Paratype 1)

Measurements (mm). Total length 7.65. Carapace length 4.00, width 3.00. Abdomen length 3.65, width 2.05.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	3.05	4.10	2.65	1.40	11.20
II	2.95	3.75	2.55	1.35	10.60
III	2.70	3.35	2.75	1.35	10.15
VI	3.55	4.50	4.25	1.85	14.15
Palp	1.40	1.35	—	1.15	3.90

Differs from the female holotype in the palp having tarsal organs (Figs. 19 & 20) with a transversely elongated median apophysis bearing a small projection at the base.

Variation: Total length ♀ 7.85–13.50, ♂ 6.45–9.50. Carapace length ♀ 4.00–5.50, ♂ 3.20–4.55; width ♀ 3.10–4.00, ♂ 2.40–3.50. Abdomen length ♀ 3.85–6.90, ♂ 3.25–5.00; width ♀ 2.60–4.50, ♂ 1.80–2.75.

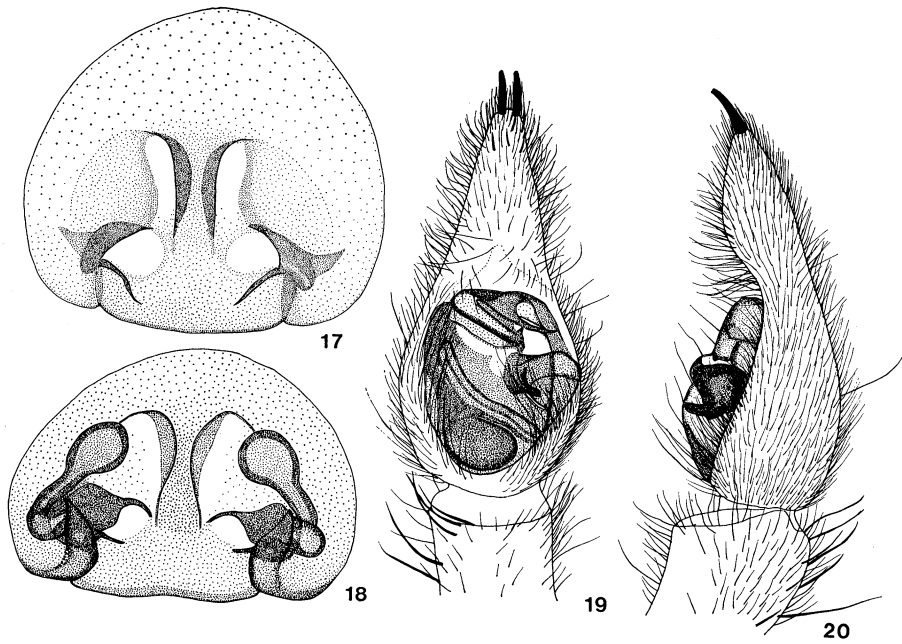
Holotype: ♀, and paratype 1: ♂, Inunakisan, Osaka Prefecture, Honshu, Japan, 1. V. 1970 (H. TANAKA).

Paratypes: 6♀, 8♂, same data as holotype.

Other specimens examined: Hokkaido- 1♀, Rausu, 5–7. VIII. 1956 (O. SATO); 1♀, Kamikawa, 26. VII. 1956 (O. SATO); 1♂, Sounkyo, 8–9. VII. 1971 (H. TANAKA); 1♀, Sapporo, 26. VII. 1972 (M. SUWA); 3♀, 2♂, same locality, 29. V. 1974 (M. SUWA); Honshu- 2♂, Yunotai, Akita Pref., 10. X. 1975 (H. OHASHI); 1♀, Hayachine, Iwate Pref., 2. IX. 1977 (F. KOMAI); 1♀, 1♂, Nagaoka, Niigata Pref., 18. V. 1978 (M. MIZUSAWA); 1♀, Kuzuu-cho, Tochigi Pref., 11. IV. 1977 (J. SAGARA); 1♂, Maebashi, Gunma Pref., 12. V. 1967 (B. TAKEI); 2♀, Todai, Nagano Pref., 22. VII. 1972 (H. TANAKA); 1♀, Fujieda, Shizuoka Pref., 3. XI. 1965 (H. KASAHARA); 2♂ Taihizan, Kyoto Pref., 12. IX. 1970 (H. TANAKA); 1♂ Omimesan, Nara Pref., 7. VI. 1970 (H. TANAKA); 2♀, 3♂, Odaigahara, Nara Pref., 12–14. VI. 1971 (H. TANAKA); 1♂, Iwawakisan, Osaka Pref., 13. V. 1970 (H. TANAKA); 1♂, Mikata, Hyogo Pref., 5. IV. 1970 (H. TANAKA); Shikoku- 1♂, Omogokei, Ehime Pref., 26. V. 1970 (H. TANAKA); Kyushu- 3♀, Kirishimajingu, Kagoshima Pref., 27. V. 1971 (H. TANAKA).

Distribution: Japan (Hokkaido, Honshu, Shikoku and Kyushu).

Biological notes: This species dwells under the stones of the shores of rivers. Mature females are found from mid-April to August and early in September, and males from early in April to July and from September to October. Formation of egg sacs is found in May and June, and the number of eggs is 80 in one egg sac on the average.



Figs. 17-20. *Arctosa kawabe* n. sp. 17. Female epigynum (ventral view). 18. Female epigynum (dorsal view). 19. Male palp (ventral view). 20. Male palp (retrolateral view).

Remarks: This species is allied to the European *A. stigmosa* (THORELL), but can be separated from the latter by the larger size, and by the transverse elongated median apophysis of the male palp (Fig. 19).

***Alopecosa moriutii* n. sp.**

(Figs. 21-24)

[Japanese name: Hatachi-komorigumo]

Female (Holotype)

Measurements (mm). Total length 12.80. Carapace length 5.30, width 4.00. Abdomen length 7.50, width 5.40.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	3.50	4.20	2.40	1.70	11.80
II	3.30	4.00	2.40	1.60	11.30
III	3.10	3.70	2.60	1.70	11.10
IV	4.00	4.80	4.10	2.00	14.90
Palp	1.90	1.80	—	1.50	5.20

Carapace dark reddish brown, with indistinct light yellow median band. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other and from laterals by less than half the diameter of median eye; anterior eye row weakly procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is equal to the distance between posterior median and lateral eye rows. Clypeus reddish brown, slightly smaller than the diameter of anterior median eye. Chelicera dark reddish brown dorsally; reddish brown ventrally; cheliceral teeth with three in retromargin. Maxilla and labium reddish brown. Sternum dark reddish brown. Abdomen light grey, with some dark brown transverse zigzag lines in dorsal surface; a lanceolate median mark indistinct; lateral surface light yellow, with many black spots; ventral surface dark brown at median part, and lateral sides light yellow, with many black spots. Legs and palp reddish brown, with distinct dark brown annulations on femora, except for dark brown ventral coxae I–IV; metatarsus and tarsus I with a trichobothrium on each dorsal base; palpal tarsus with two claws. Epigynum with a septum broadly dilated toward base (Fig. 21); a pair of narrow and incurved seminal ducts, and globular spermathecae present at their tips (Fig. 22).

Male (Paratype 1)

Measurements (mm). Total length 8.90. Carapace length 4.65, width 3.30. Abdomen length 4.25, width 2.75.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	3.25	3.90	2.60	1.85	11.60
II	3.05	3.65	2.55	1.80	11.05
III	3.00	3.40	2.80	1.55	10.75
IV	3.70	4.25	4.15	1.90	14.00
Palp	1.65	1.45	—	1.45	4.55

Differences of the male from the female are as follows: Carapace with distinct light yellow median band. Abdomen with a clear light yellow band, ex-

tending to the spinnerets, and with white pubescences on light yellow band; a lanceolate median mark absent; lateral and ventral surfaces dark brown. Legs dark brown on coxae, trochanters and femora I-IV, and light yellowish brown from patellae to tarsi I-IV; tibiae, metatarsi and tarsi I-II with many trichobothria elongated straight outward. Palp with many conspicuous black hairs at retrolateral side on femur; tarsal organs (Figs. 23 & 24), with median apophysis which is downwardly curved at tip; tarsus with no claws.

Variation: Total length ♀ 9.90-12.80, ♂ 6.75-8.90. Carapace length ♀ 4.70-5.40, ♂ 4.00-4.65; width ♀ 3.60-4.00, ♂ 2.75-3.30. Abdomen length ♀ 5.20-7.50, ♂ 3.10-4.25; width ♀ 3.70-5.50, ♂ 2.20-2.80. The color varies from light reddish brown to dark brown in females.

Holotype: ♀, and paratype 1: ♂, Numata Gunma Prefecture, Honshu, Japan, 3. V. 1965 (B. TAKEI).

Paratypes: 2♂, same locality as holotype, 15. IV. 1963 (B. TAKEI); 4♀, 2♂, same data as holotype.

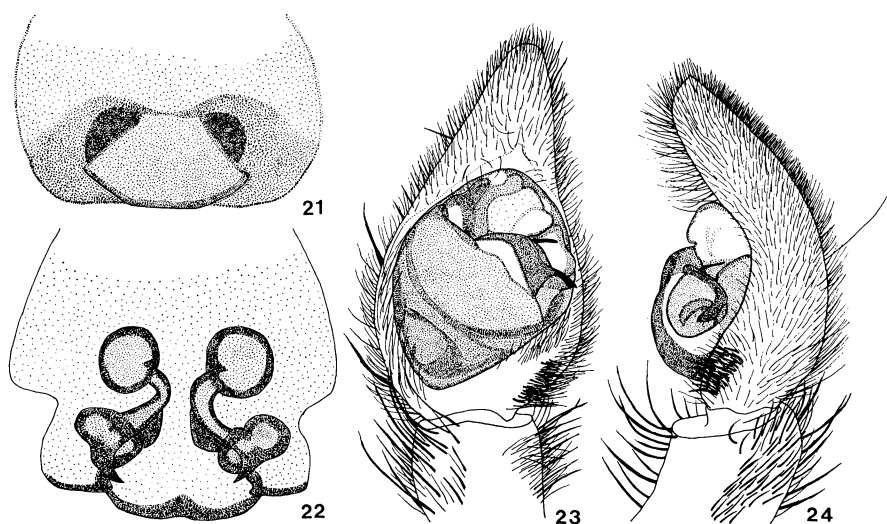
Other specimens examined: Hokkaido- 1♂, Souunkyo, 8-9. VII. 1971 (H. TANAKA); 3♀, Tomakomai, 7. XI. 1974 (M. SUWA); Honshu- 3♀, Mukou-hama, Akita Pref., 11-21. VI. 1977 (A. FUKUSHIMA); 10♂, same locality, 4. V. 1978 (A. FUKUSHIMA); 1♀, Ito, Shizuoka Pref., 16. III. 1972 (H. TANAKA); 1♀, same locality, 12. X. 1972 (H. SAITO); 1♀, Takatomi-cho, Gifu Pref., 3. VII. 1976 (H. NAGAI); 1♀, Yodogawa, Osaka Pref., 30. IV. 1973 (H. TANAKA); 1♀, Hikami, Hyogo Pref., 17. V. 1970 (H. TANAKA); 3♀, same locality, 5. VII. 1970 (H. TANAKA); 1♀, Matsue, Shimane Pref., 7. XI. 1976 (M. SUGITANI).

Distribution: Japan (Hokkaido and Honshu).

Biological notes: This species is found among the grasses of the river banks or fields. Mature females appear from March to July and males from March to May. Formation of egg sacs is found in June. The number of eggs varies from 40 to 180 in one egg sac.

Remarks: In the shape of epigynum and male palp, this species is allied to *A. hokkaidensis* n. sp., from which it may be distinguished by the absence of a distinct light median band on the carapace in the female and by the presence of a light median band on the abdominal dorsum in the male.

In the shape of epigynum, it is also allied to the European *A. striatipes* (C. L. KOCH) and the Chinese *A. fabifer* (SCHENKEL); from *striatipes* it differs in the indistinct light yellow median band of female carapace and in the shape of the



Figs. 21-24. *Arctosa moriutii* n. sp. 21. Female epigynum (ventral view). 22. Female epigynum (dorsal view). 23. Male palp (ventral view). 24. Male palp (retrolateral view).

downwardly curved tip of median apophysis of male palp (Fig. 23), from *fabifer* it is easily separated by the three spines at apex of dorsal surface of femora I, instead of one spine.

***Alopecosa hokkaidensis* n. sp.**

(Figs. 25-28)

[Japanese name: Ashimadara-komorigumo]

Tarentula striatipes: SAITO, 1934, pp. 354-355 (not C.L. KOCH, 1837).

Lycosa striatipes: SAITO, 1941, p. 115; —, 1959, p. 55 (not C.L. KOCH, 1837).

Female (Holotype)

Measurements (mm). Total length 15.00. Carapace length 5.70, width 4.50. Abdomen length 9.30, width 6.30.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	3.90	4.50	2.70	1.95	13.05
II	3.75	4.50	2.85	1.80	12.90
III	3.45	4.05	3.00	1.95	12.45
IV	4.50	4.95	4.50	2.40	16.35
Palp	1.95	1.95	—	1.50	5.40

Carapace reddish brown, with distinct light yellow median band. Anterior median eyes equal to lateral eyes in diameter; anterior medians separated from each other and from laterals by less than half the diameter of median eye; anterior eye row weakly procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is subequal to the distance between posterior median and lateral eye rows. Clypeus reddish brown, slightly larger than the diameter of anterior median eye. Chelicera, maxilla, labium and sternum dark reddish brown; cheliceral teeth with two in retromargin. Abdomen reddish brown in dorsal surface, with an indistinct lanceolate median mark and some light yellow transverse bars on posterior half; lateral and ventral surfaces reddish brown. Legs and palp uniformly reddish brown; metatarsus and tarsus I with a trichobothrium on each dorsal base; palpal tarsus with two claws. Epigynum with copulatory openings located at anterolateral angles of septum (Fig. 25); a pair of short seminal ducts and with egg-like spermathecae present at their tips as in Fig. 26.

Male (Paratype 1)

Measurements (mm). Total length 9.90. Carapace length 5.25, width 3.90. Abdomen length 4.65, width 3.15.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	3.75	4.65	3.45	2.25	14.10
II	3.60	4.20	3.15	2.10	13.05
III	3.60	4.05	3.45	1.95	13.05
IV	5.10	5.25	4.95	2.40	17.70
Palp	1.80	1.65	—	1.65	5.10

Differs from the female holotype as follows: Carapace dark reddish brown. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by less than diameter of lateral eye, and from lateral eyes by less than the radius of lateral eye. Clypeus brown, about as large as the diameter of anterior lateral eye. Abdomen dark reddish brown. Legs dark reddish brown, with many trichobothria on tibiae, metatarsus and tarsi I–II. Palp dark reddish brown, with many conspicuous black hairs at retrolateral side on femur; tarsal organs (Figs. 27 & 28) with a stout median apophysis, which is tapering to apex; tarsus without claws.

Variation: Total length ♀ 9.45–15.00, ♂ 8.55–10.80. Carapace length ♀

4.95-5.70, ♂ 4.65-5.55; width ♀ 3.60-4.50, ♂ 3.60-4.20. Abdomen length ♀ 4.50-9.30, ♂ 3.90-5.25; width ♀ 3.00-6.30, ♂ 2.70-3.15. There are two different type in the coloration; one type is given here, and the other type has the carapace with a dark brown rhombic in the light yellow median band, the legs I-IV with some distinct annulations, and the abdomen without the distinct light median band.

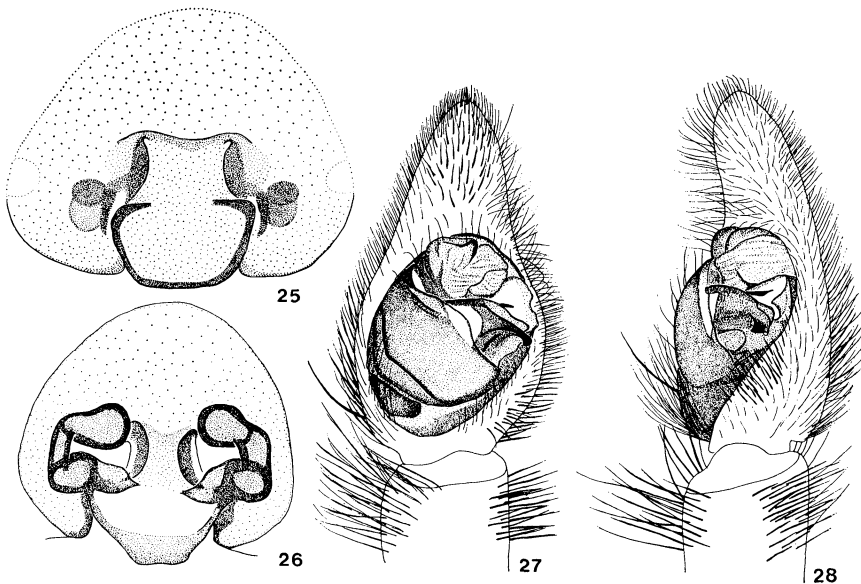
Holotype: ♀, and paratype 1: ♂, Daisetsuzan, Hokkaido, Japan, 7. VII. 1979 (N. YASUDA).

Paratypes: Hokkaido- 1♀, 26. VII. 1951 (Y. HIRASHIMA); 2♀, 7♂, VII. 1977 (N. YASUDA); 1♀, 4. VIII. 1978 (N. YASUDA); 2♀, 3♂, 7. VII. 1979 (N. YASUDA). The locality of all paratypes are same as holotype.

Distribution: Japan (Hokkaido).

Biological notes: This species has been found among the grasses or stones in mountainous zones between 1000 and 2000 meters in height. Mature females appear from June to September and males in June. The egg sac is unknown.

Remarks: This species is similar to *A. striatipes* (C. L. KOCH) from Europe and *A. moriutii* n. sp. from Japan. This species is easily distinguished from



Figs. 25-28. *Alopecosa hokkaidensis* n. sp. 25. Female epigynum (ventral view). 26. Female epigynum (dorsal view). 27. Male palp (ventral view). 28. Male palp (retrolateral view).

striatipes by the absence of the light yellow lateral band on the carapace, and by the male palpal median apophysis which is tapering to apex (Fig. 27). The discriminating characters from *moriutii* are noted in the remarks of the *moriutii*.

SAITO (1934, 1941 and 1959) redescribed *Lycosa striatipes* C.L. KOCH on the basis of females and males from Japan. Judging from their descriptions, I am fully convinced that it is not *striatipes*, but a new species.

***Pardosa agraria* n. sp.**

(Figs. 29-32)

[Japanese name: Inada-harige-komorigumo]

Lycosa laura: BÖSENBERG and STRAND, 1906, p. 323, Pl. 8, Fig. III, Pl. 13, Figs. 317, 333 (not KARSCH, 1879).

Male (Holotype)

Measurements (mm). Total length 4.90. Carapace length 2.70, width 2.10. Abdomen length 2.20, width 1.50.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.10	2.50	1.80	1.30	7.70
II	2.00	2.40	1.90	1.20	7.50
III	2.00	2.30	2.10	1.20	7.60
IV	2.60	3.20	3.30	1.70	10.80
Palp	1.10	1.20	—	1.00	3.30

Carapace blackish brown, with a yellowish brown median band, which is broadly dilated in front. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by about the diameter of lateral eye, and from lateral eyes by length being smaller than half the diameter of median eye; anterior eye row procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus black, larger than the diameter of anterior median eye. Chelicera black, with yellowish brown at apex and with a longitudinal band ventrally; cheliceral teeth with three in retromargin. Maxilla and labium blackish brown. Sternum black, with a narrow yellowish brown median band at anterior half. Abdomen almost black, with many yellowish brown spots sporadically on dorsal surface; a yellowish brown median mark distinct; lateral surfaces black, with some yellowish brown interrupted lines;

ventral surface almost black. Legs reddish brown, except for whitish brown ventral coxae I-IV; femora I-V with faint annulations. Palp blackish brown, with especially many black hairs at apex on tibia; tarsal organs (Figs. 29-30) with robust median apophysis, which is sharp at point and narrowly projecting downward from the lateral edge; tarsus with two claws.

Female (Paratype 1)

Measurements (mm). Total length 5.30. Carapace length 2.90, width 2.20. Abdomen length 2.40, width 1.70.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.30	2.90	1.80	1.20	8.20
II	2.30	2.70	1.80	1.30	8.10
III	2.20	2.50	2.10	1.20	8.00
IV	2.90	3.50	3.60	1.60	11.60
Palp	1.00	1.80	—	0.90	3.70

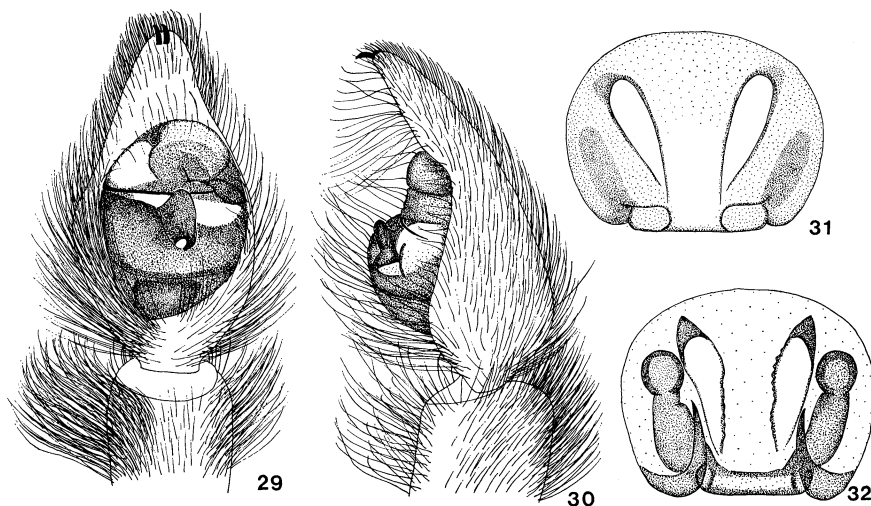
Similar to the male holotype, but different from it as follows: Carapace reddish brown, with yellowish brown lateral bands. Clypeus light yellowish brown. Chelicera and maxilla reddish brown. Labium dark brown. Sternum light yellowish brown, with black U-shaped mark and black interrupted line along margin. Abdomen black in dorsal surface, with five pairs of light yellow regions on the posterior half, which have black dots in each lateral sides; a lanceolate median mark indistinct, with five pairs of black dots along margin; lateral and dorsal surfaces yellowish brown. Legs and palp reddish brown, except for whitish brown ventral coxae I-IV; femora I-IV with distinct annulations and tibiae I-IV with indistinct ones. Epigynum with a pair of long and slender genital openings, as shown in Fig. 31; anterior edge spermathecae lower than that of genital opening (Fig. 32).

Variation: Total length ♀ 4.50-7.80, ♂ 3.00-4.90. Carapace length ♀ 2.20-3.30, ♂ 1.70-2.60; width ♀ 1.80-2.60, ♂ 1.30-2.10. Abdomen length ♀ 2.30-4.70, ♂ 1.30-2.30; width ♀ 1.60-3.30, ♂ 1.00-1.40. The clypeal length ranges one to three times the diameter of the anterior median eye in both sexes. In some specimen of the male, the sternum has many light yellowish brown regions and the yellowish brown median band is particularly broad. The color of legs is light yellowish brown in some males. On the apex of the metatarsus I, there is dark brown region in a few females.

Holotype: ♂, and paratype 1: ♀, Ouginosen, Mikata-gun, Hyogo Prefecture, Japan, 22. VI. 1972 (H. TANAKA).

Paratypes: 1♀, 2♂, same data as holotype.

Other specimens examined: Hokkaido- 13♀, 2♂, Sapporo, 23. VII. 1971 (H. TANAKA); 2♀, 1♂, same locality, V. 1974 (M. SUWA); 6♀, 3♂, Onuma-koyen, 11. VII. 1973 (H. TANAKA); Honshu- 1♀, 1♂, Kuzakai, Iwate Pref., 26. VI. 1973 (F. KOMAI); 15♀, 5♂, Ina, Nagano Pref., 7. VII. 1972 (H. TANAKA); 2♂, Nyugayama, Nagano Pref., 26. VII. 1972 (H. TANAKA); 2♂, Minotoguchi, Nagano Pref., 29. VI. 1973 (H. TANAKA); 1♀, Kibune, Kyoto Pref., 8. VI. 1970 (H. TANAKA); 5♀, 2♂, Taihi-zan, Kyoto Pref., 12. IX. 1970 (H. TANAKA); 1♀, 3♂, Iwakisan, Osaka Pref., 24. V. 1970 (H. TANAKA); 1♀, 2♂, Koyasan, Wakayama Pref., 29. VII. 1970 (H. TANAKA); 1♀, Sasagamine, Hyogo Pref., 6. VIII. 1968 (H. TANAKA); 1♀, 1♂, Inako, Tottori Pref., 16. VII. 1968 (T. ARITA); Shikoku- 4♀, 5♂, Kamiakui-cho, Tokushima Pref., 30. V. 1979 (H. TANAKA); 16♀, 10♂, Tarumi, Ehime Pref., 25. V. 1970 (H. TANAKA); Kyushu- 1♀, 1♂, Hikosan, Fukuoka Pref., 25. VIII. 1954 (T. TAKACHIHO); 6♀, 8♂, same locality, 20-24. V. 1971 (H. TANAKA); 1♂, Aso, Kumamoto Pref., 15. VII. 1971 (K. YAMAMOTO); 1♀, Ogochi, Miyazaki Pref., 7. VIII. 1961 (C. OKUMA); 10♀, 8♂, Kamiarada, Kagoshima Pref., 25. V. 1971 (H. TANAKA); 10♀, 1♂, Satamisaki, Kagoshima Pref.,



Figs. 29-32. *Pardosa agraria* n. sp. 29. Male palp (ventral view). 30. Male palp (retrolateral view). 31. Female epigynum (ventral view). 32. Female epigynum (dorsal view).

29. V. 1971 (H. TANAKA).

Distribution: Japan (Hokkaido, Honshu, Shikoku and Kyushu).

Biological notes: This species is found in the paddy fields and farms. Mature spiders have been collected from May to September in both sexes. The number of eggs is 45 in one egg sac on the average.

Remarks: This species is allied to *P. laura*, occurring in Japan, Korea, China and Formosa, and *P. diversa* n. sp. from Japan. It is difficult to separate them by the shape of female epigynum and male palp. However, they can be separated from each other by the following points: From *laura* and *diversa*, this species differs in the absence of white pubescence on anterior half of male palp. In *laura*, metatarsus of male leg I has dark brown part. In *diversa*, metatarsus of male leg I is uniformly light yellowish brown.

BÖSENBERG and STRAND (1906) redescribed *Lycosa laura* KARSCH on the basis of one female and one male or more from Japan. Judging from the re-description, I am fully convinced that it is not *laura*, but a new species.

***Pardosa diversa* n. sp.**

(Figs. 33-36)

[Japanese name: Hata-harige-komorigumo]

Male (Holotype)

Measurements (mm). Total length 5.00. Carapace length 2.80, width 2.10. Abdomen length 2.20, width 1.60.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.30	2.90	2.10	1.30	8.60
II	2.20	2.70	2.00	1.30	8.20
III	2.10	2.60	2.30	1.30	8.30
IV	2.80	3.40	3.60	1.70	11.50
Palp	1.10	1.00	—	0.90	3.00

Carapace blackish brown, with a yellowish brown median band, which is broadly dilated in front. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by about the diameter of lateral eye, and from lateral eyes by half the diameter of lateral eye; anterior eye row procurved; posterior lateral eye row about 1.4 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral

eye rows. Clypeus yellowish brown, larger than the diameter of anterior median eye. Chelicera dark reddish brown, with yellowish brown apex and with a yellowish brown longitudinal band in ventral surface; cheliceral teeth with three on retromargin. Maxilla, labium and sternum greyish black. Abdomen reddish brown in dorsal and lateral surfaces, with many light yellow spots and with some black markings; a median marks indistinct; ventral surface almost greyish black. Legs black on all surfaces of coxae I-IV, on ventral surface of trochanters I-IV and posterior half of femora I-IV; light yellowish brown on the remaining segments I-IV, except for dark brown markings on dorsal surface of femora I-IV. Palp blackish brown, with white pubescence on dorsal and lateral surfaces of femur, and on prolateral surface of patella; tarsal organs (Figs. 33-34) with robust median apophysis, which is sharp at the apex and has a narrowly projecting branch downward from lateral edge; tarsus with two claws.

Female (Paratype 1)

Measurements (mm). Total length 5.50. Carapace length 2.80, width 2.20. Abdomen length 2.70, width 1.80.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.30	3.10	1.90	1.30	8.60
II	2.30	2.80	2.00	1.20	8.30
III	2.20	2.60	2.20	1.20	8.20
IV	3.10	3.70	3.90	1.70	12.40
Palp	1.00	1.30	—	1.00	3.30

Similar to the male holotype, but differs from it as follows: Carapace dark reddish brown, with yellowish brown median band, which is broadly dilated in front, and lateral bands. Chelicera dark yellowish brown. Maxilla and labium dark reddish brown. Sternum dark reddish brown, with a faint yellowish brown median band. Abdomen reddish brown in dorsal surface, with many light yellow spots and some black markings; sides yellowish brown with black markings; ventral surface reddish brown. Legs and palp reddish brown, except for dark brown ventral coxae I-IV; femora, patellae and tibiae I-IV with distinct annulations; metatarsus I faintly dark brown at apex. Epigynum with a pair of slender genital openings, as shown in Fig. 35; spermathecae not extending to anterior edge of genital openings (Fig. 36).

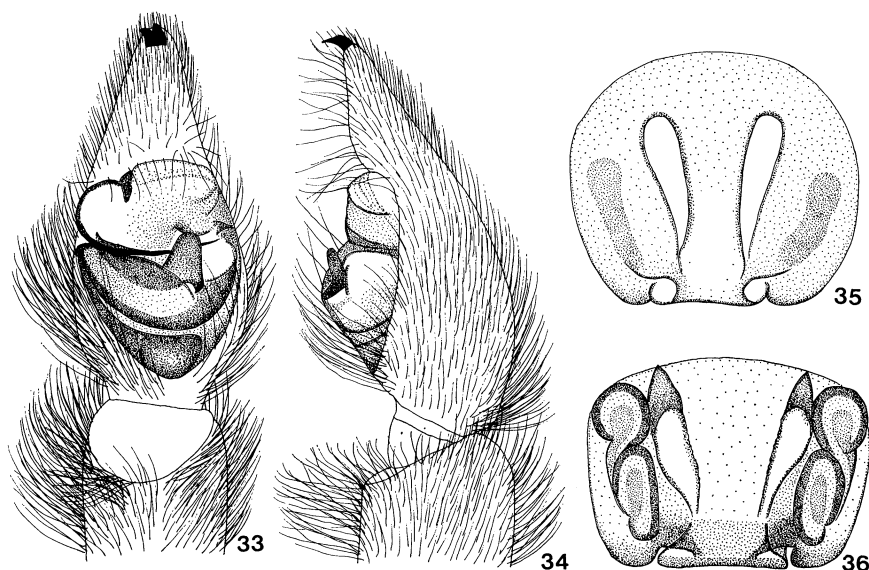
Variation: Total length ♀ 5.10-7.90, ♂ 4.30-5.00. Carapace length ♀ 2.40-

3.00, ♂ 2.30-2.70; width ♀ 1.90-2.40, ♂ 1.80-2.10. Abdomen length ♀ 2.50-4.90, ♂ 2.00-2.40; width ♀ 1.80-3.50, ♂ 1.40-1.60. The clypeal length ranges one to three times the diameter of anterior median eye in both sexes. In some male examples there is faintly narrow median band on the sternum. The yellowish brown median band on the sternum is absent in some females. In some females, ventral coxae I-IV are almost black as in male. In some samples of the females, dark brown apical part of metatarsus I is absent.

Holotype: ♂, and paratype 1: ♀, Ouginosen, Hyogo Prefecture, Japan, 22. VI. 1972 (H. TANAKA).

Paratypes: 20 ♀, 9 ♂, same data as holotype; 1 ♀, same locality, 28. IV. 1975 (R. AZUMI); 6 ♀, Sugahara, Hyogo Pref., 14-16. VII. 1970 (F. KOMAI).

Other specimens examined: Honshu- 1 ♀, Yakeishidake, Iwate Pref., 20. VII. 1964 (Y. SUGANAMI); 1 ♂, Akayu, Yamagata Pref., 10. V. 1959 (S. NISHIKI); 2 ♀, Zao-onsen, Yamagata Pref., 11. VIII. 1976 (H. YOSHIDA); 1 ♀, Yuzawa, Niigata Pref., 19. VII. 1972 (F. KOMAI); 1 ♀, 2 ♂, Hyonosen, Hyogo Pref., 21. V. 1972 (T. ARITA); 1 ♀, Hidaka-cho, Hyogo Pref., 20. IV. 1975 (I. HASHIMOTO); 1 ♂, Kami-saibara, Okayama Pref., 8. VI. 1975 (T. MAEDA); 1 ♂, Fukuoda, Yamaguchi



Figs. 33-36. *Pardosa diversa* n. sp. 33. Male palp (ventral view). 34. Male palp (retrolateral view). 35. Female epigynum (ventral view). 36. Female epigynum (dorsal view).

Pref., VIII. 1963 (T. SUZUKI).

Distribution: Japan (Honshu).

Biological notes: This species is found in bushes and fields abutting on mountains. Mature females have been collected from late in April to September and male late in April to July. The number of eggs is about 40 in one egg sac.

Remarks: This species is allied to *P. laura*, occurring in Japan, Korea, China and Formosa, and *P. agraria* n. sp. from Japan. The discriminating characteristics of them are noted in the remarks of the *agraria*.

***Pardosa graminea* n. sp.**

(Figs. 37-40)

[Japanese name: Kusachi-komorigumo]

Female (Holotype)

Measurements (mm). Total length 4.50. Carapace length 2.20, width 1.80. Abdomen length 2.30, width 1.70.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.70	2.10	1.30	1.00	6.10
II	1.70	2.00	1.30	1.00	6.00
III	1.60	1.80	1.40	1.00	5.80
IV	2.20	2.70	2.60	1.30	8.80
Palp	0.80	0.90	—	0.70	2.40

Carapace blackish grey, with light yellow median and lateral bands; head region black in anterior part and reddish brown in posterior part; marginal dark brown bands interrupted. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by about the diameter of lateral eye, and from lateral eyes by about half the diameter of lateral eye; anterior eye row procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye row. Clypeus yellowish brown, about two times the diameter of anterior median eye. Chelicera yellowish brown, with black in front; cheliceral teeth with three in retromargin. Maxilla yellowish brown. Labium blackish grey. Sternum dark reddish brown, with light yellow region in center. Abdomen reddish brown in dorsal surface, with black markings; a lanceolate median mark distinct; lateral and ventral surfaces yellowish brown, with black markings.

Legs reddish brown, with distinct annulations on femora I-IV, patellae and tibiae I-IV, especially conspicuous on femora I-IV. Palp yellowish brown, with clear annulations on femur; tarsus with two claws. Epigynum with a pair of short and narrow genital openings (Fig. 37); a pair of long and narrow spermathecae situated beyond the edge of genital openings (Fig. 38).

Male (Paratype 1)

Measurements (mm). Total length 3.80. Carapace length 2.00, width 1.60. Abdomen length 1.80, width 1.30.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.60	2.10	1.50	1.10	6.30
II	1.50	1.80	1.30	1.00	5.60
III	1.40	1.70	1.50	0.90	5.50
IV	2.00	2.40	2.30	1.20	7.90
Palp	0.70	0.80	—	0.70	2.20

Similar to the female holotype, but different in the following points: Carapace with distinct light yellowish brown bands between brown lateral bands and margin; head region almost black. Legs yellowish brown, with black apical tibia I. Palp whitish brown on patella and on apex on femur, with conspicuous white pubescence on them, and the rest black. Palp: tarsal organs with a small median apophysis as in Figs. 39-40; tarsus with no claws.

Variation: Total length ♀ 4.45-5.35, ♂ 3.80-4.00. Carapace length ♀ 2.20-2.60, ♂ 2.00-2.15; width ♀ 1.65-2.00, ♂ 1.55-1.60. Abdomen length ♀ 2.20-3.05, ♂ 1.65-1.95; width ♀ 1.55-2.00, ♂ 1.15-1.30.

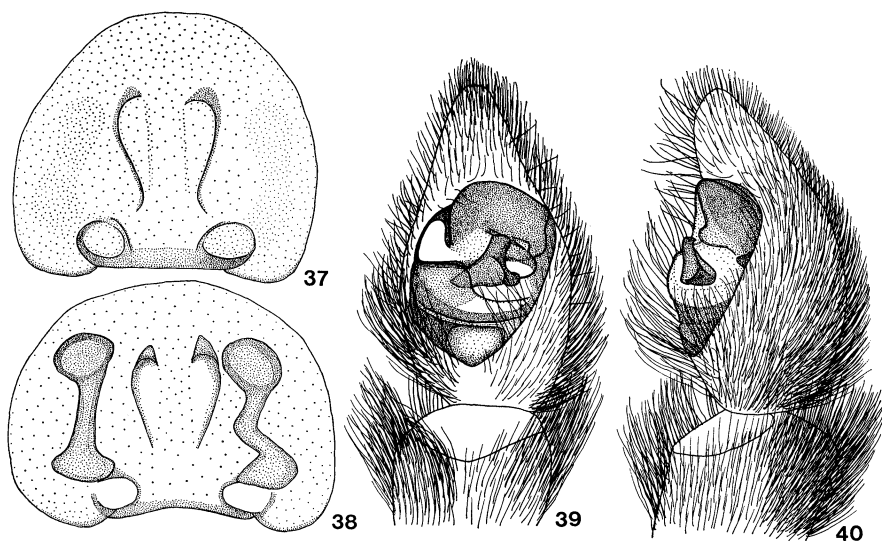
Holotype: ♀, and paratype 1: ♂, Hidaka-cho, Iruma-gun, Saitama Prefecture, Japan, 3. V. 1974 (H. TANAKA).

Paratypes: Honshu- 2♀, 2♂, Kandachi, Ibaraki Pref., 6. V. 1977 (M. SUWA); 1♂, Hidaka-cho, Saitama Pref., 21. IV. 1973 (H. TANAKA); 6♀, 3♂, same data as holotype.

Distribution: Japan (Honshu).

Biological notes: This species inhabits mainly open meadow. Mature spiders have been collected in April and May, and the formation of egg sacs is found early in May. The number of eggs is 30 in one egg sac on the average.

Remarks: This species is closely allied to *P. brevivulva* TANAKA from Japan in the shape of the female epigynum, but is easily distinguished from the latter



Figs. 37-40. *Pardosa graminea* n. sp. 37. Female epigynum (ventral view). 38. Female epigynum (dorsal view). 39. Male palp (ventral view). 40. Male palp (retrolateral view).

by the absence of the tarsal claw of the male palp, by the presence of the conspicuous white hairs on the femur and patella of the male palp, and by the presence of the continuous light lateral bands on the carapace of the female.

***Pardosa okinawensis* n. sp.**

(Figs. 41-44)

[Japanese name: Ryukyu-komorigumo]

***Female* (Holotype)**

Measurements (mm). Total length 5.40. Carapace length 2.70, width 2.10. Abdomen length 2.70, width 1.80.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.30	2.80	1.70	1.20	8.00
II	2.10	2.40	1.70	1.10	7.30
III	2.00	2.20	1.90	1.00	7.10
IV	2.70	3.30	3.40	1.50	10.90
Palp	1.00	1.20	—	0.90	3.10

Carapace reddish grey, with faintly yellowish brown radiating region around median furrow and with yellowish brown interrupted lateral bands. Anterior median eye about 1.5 times as large as anterior lateral eye; anterior median eyes separated from each other by about the diameter of lateral eye, and from lateral eyes by length being smaller than half the diameter of lateral eye; anterior eye row procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus light yellowish brown, larger than the diameter of anterior median eye. Chelicera dark reddish brown. Maxilla whitish yellow. Labium blackish grey on base, and yellowish brown at apex. Sternum black, except for light yellow margin. Abdomen black in dorsal surface, with five pairs of light yellow regions, which have a black dot on each of the centers; a lanceolate median mark distinct, with many golden pubescence; sides light yellowish brown, with black markings; ventral surface light yellowish brown, with distinct annulations from femora to metatarsi I-IV. Palp whitish yellow, with distinct annulations on femur; tarsus with two claws. Epigynum with a pair of hare's ear-shaped genital openings at central part (Fig. 41); a pair of robust and short spermathecae present at anterior part (Fig. 42).

Male (Paratype 1)

Measurements (mm). Total length 5.10. Carapace length 2.60, width 2.10. Abdomen length 2.50, width 1.60.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.10	2.70	1.90	1.30	8.00
II	2.10	2.60	1.90	1.20	7.80
III	1.90	2.30	2.00	1.10	7.30
IV	2.60	3.10	3.30	1.60	10.60
Palp	1.10	0.90	—	1.20	3.20

Similar to the female holotype, but differs from it as follows: Carapace with many golden pubescence on wide median region; lateral yellowish brown bands ill-defined. Sternum with grey margin. Abdomen whitish yellow in dorsal surface, with three pairs of transverse black lines and with four pairs of black dots. Legs greyish brown, with distinct annulations on femora I-IV and with faint ones on tibiae I-IV. Palp: Femur black on basal part, and whitish yellow on anterior part with many black and white pubescence; patella and tibia whitish yellow, with many white pubescence; tarsus dark brown, yellowish brown at

apex. Palp: tarsal organs (Figs. 43-44) with a tongue-like median apophysis; tarsus with no claws.

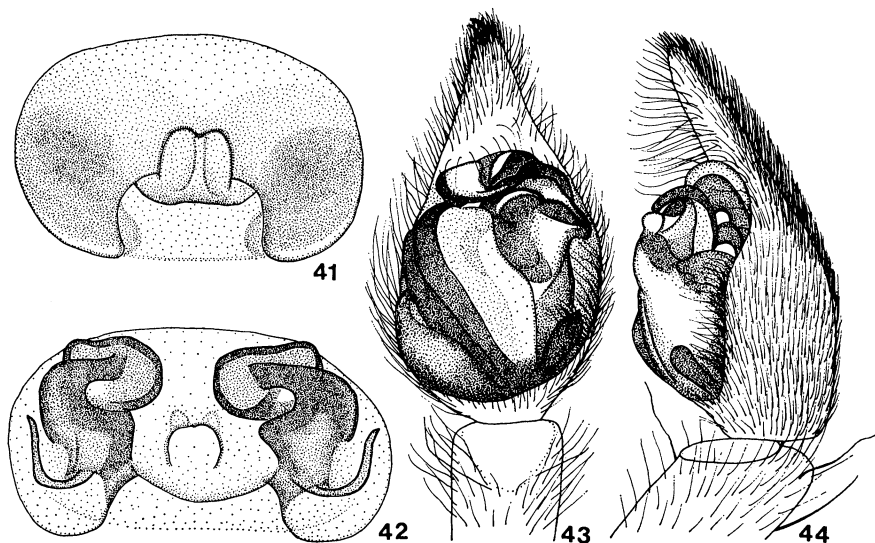
Variation: Total length ♀ 4.69-7.56, ♂ 5.06-5.44. Carapace length ♀ 2.38-2.81, ♂ 2.56-2.81; width ♀ 1.94-2.31, ♂ 2.10-2.31. Abdomen length ♀ 2.31-4.75, ♂ 2.50-2.81; width ♀ 1.63-2.69, ♂ 1.56-1.94. In both sexes, the color varies from reddish brown to blackish brown.

Holotype: ♀, and paratype 1: ♂, Hentona, Okinawa Is., Okinawa Prefecture, Japan, 15. VII. 1976 (H. YOSHIDA).

Paratypes: Nansei Isls.- 1♀, 1♂, Chinen-mura, Okinawa Is., Okinawa Pref., 9. VII. 1976 (H. YOSHIDA); 1♀, same locality, 4. VIII. 1978 (H. YOSHIDA); 1♀, 1♂, same data as holotype; 1♀, Katsuudake, Okinawa Is., Okinawa Pref., 6. VI. 1977 (Y. CHIKUNI); 4♀, 4♂, Manko, Okinawa Is., Okinawa Pref., 7. III. 1979 (J. SAGARA); 5♀, 2♂, Izumi, Okinawa Is., Okinawa Pref., 12. V. 1980 (E. NISHIDA).

Distribution: Japan (Nansei Isls.).

Biological notes: This species inhabits meadow near seashores and open lands of mountains. Mature spiders are found from March to August. Formation of egg sacs is found in May and June. The number of eggs is 35 in one egg sac



Figs. 41-44. *Pardosa okinawensis* n. sp. 41. Female epigynum (ventral view). 42. Female epigynum (dorsal view). 43. Male palp (ventral view). 44. Male palp (retrolateral view).

on the average.

Remarks: This species is similar to *P. venatrix* (LUCAS) from the Mediterranean subregion, but can be separated from the latter by the shorter and broader genital opening of female epigynum (Fig. 42). This species is also allied to *P. birmanica* (SIMON) from the Oriental region, but can be separated from the latter by the faintly yellowish brown radiating region around median furrow of the female carapace.

***Pardosa umida* n. sp.**

(Figs. 45-48)

[Japanese name: Hime-komorigumo]

Female (Holotype)

Measurements (mm). Total length 4.50. Carapace length 2.30, width 1.70. Abdomen length 2.20, width 1.40.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.00	2.40	1.50	0.90	6.80
II	1.80	2.30	1.50	0.90	6.50
III	1.70	2.00	1.70	0.80	6.20
IV	2.40	3.10	3.10	1.20	9.80
Palp	1.00	1.10	—	0.80	2.90

Carapace whitish brown, with two dark brown median bands and faint interrupted lateral bands, and a very dark brown narrow line along margin; light yellowish brown lateral bands not separated from margins by dark brown band. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by length being smaller than the diameter of median eye, and from lateral eyes by about the diameter of lateral eye; anterior eye row procurved; posterior lateral eye row about 1.3 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus whitish yellow, about two times the diameter of anterior median eye. Chelicera, maxilla and labium whitish yellow. Sternum whitish yellow, with a very narrow dark brown line along margin. Abdomen greyish brown in dorsal surface, with dark brown patches and markings; a lanceolate median mark distinct; sides greyish brown, with dark brown markings; ventral surface greyish brown. Legs and palp unicolorous, whitish brown; palpal tarsus

with two claws. Epigynum with a sacred torch-like septum (Fig. 45); spermathecae short, as illustrated in Fig. 46.

Male (Paratype 1)

Measurements (mm). Total length 4.30. Carapace length 2.20, width 1.60. Abdomen length 2.10, width 1.20.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	1.60	2.10	1.20	0.80	5.70
II	1.60	2.00	1.30	0.80	5.70
III	1.60	1.70	1.50	0.80	5.60
IV	2.10	2.50	2.60	1.00	8.20
Palp	0.80	0.80	—	0.80	2.40

Different from the female holotype as follows: Carapace reddish brown. Abdomen reddish brown in dorsal surface. Palp dark yellowish brown, with many black and golden hairs. Palp: Tarsal organs (Figs. 47-48) having a small median apophysis with process downwards; tarsus with one claw.

Variation: Total length ♀ 4.25-5.80, ♂ 3.80-4.30. Carapace length ♀ 2.25-2.60, ♂ 2.05-2.25; width ♀ 1.55-1.90, ♂ 1.45-1.60. Abdomen length ♀ 2.00-3.30, ♂ 1.70-2.10; width ♀ 1.35-2.05, ♂ 1.05-1.20. In some specimens, femora I-IV with indistinct brown markings.

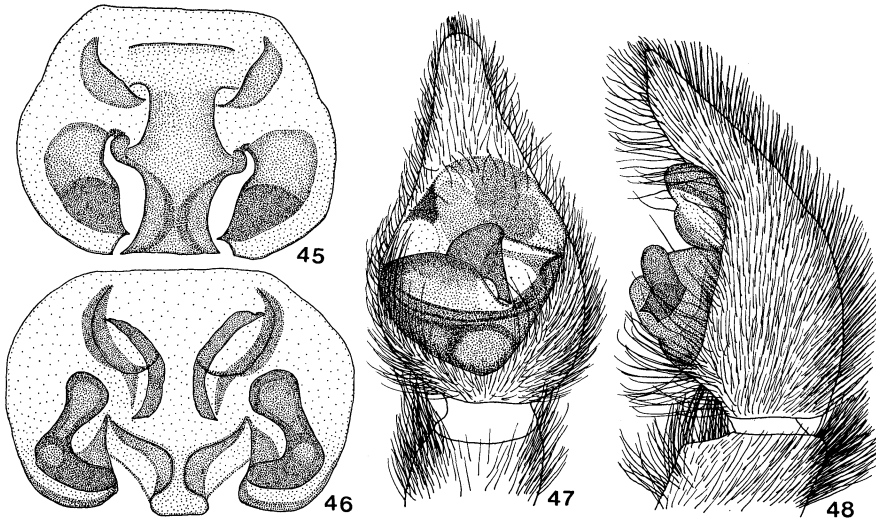
Holotype: ♀, and paratype 1: ♂, Minami-minowa-mura, Kami-ina-gun, Nagano Prefecture, Japan, 28. VI. 1973 (H. TANAKA).

Paratypes: 1♀, same locality with type, 21. VII. 1972 (H. TANAKA); 30♀, 20♂, same data as holotype; 1♂, same locality, 11. VII. 1973 (M. HASEGAWA); 20♀, 15♂, same locality, 7. VII. 1974 (H. TANAKA); 3♀, 1♂, same locality, 5. VIII. 1974 (A. NOTO); Yatsugadake, Nagano Pref., 29. VI. 1973 (H. TANAKA).

Other specimens examined: Hokkaido- 6♀, 3♂, Tomakomai, 15. VII. 1975 (M. SUWA); 2♀, 1♂, Sapporo, 4. VIII. 1979 (H. TANAKA); Honshu- 2♂, Kameyama, Aomori Pref., 23. VII. 1977 (Y. TAKAHASHI); 3♂, Yamauchi, Aomori Pref., 24. VII. 1977 (Y. TAKAHASHI); 2♀, Kawase, Aomori Pref., 10. IX. 1977 (Y. TAKAHASHI).

Distribution: Japan (Hokkaido and Honshu).

Biological notes: This species lives in moist meadow. Mature spiders are found from late in June to early in September. Formation of egg sacs is found early in September. The number of eggs is about 35 in one egg sac.



Figs. 45-48. *Pardosa umida* n. sp. 45. Female epigynum (ventral view). 46. Female epigynum (dorsal view). 47. Male palp (ventral view). 48. Male palp (retrolateral view).

Remarks: This species is very closely related to *P. bifasciata* (C. L. KOCH) from Europe, but is easily distinguished from the latter by the sacred torch-like septum of the female epigynum as illustrated in Fig. 46.

***Pardosa suwai* n. sp.**

(Figs. 49-52)

[Japanese name: Numachi-komorigumo]

Female (Holotype)

Measurements (mm). Total length 6.70. Carapace length 3.30, width 2.70. Abdomen length 3.40, width 2.50.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.50	3.10	1.80	1.40	8.80
II	2.40	3.00	1.80	1.40	8.60
III	2.50	2.80	2.20	1.30	8.80
IV	3.20	3.70	3.70	1.80	12.40
Palp	1.30	1.40	—	1.00	3.70

Carapace dark reddish brown, with light reddish brown median and lateral bands, and without line along the margin; light reddish brown median band broadly dilated in front; light reddish brown lateral bands separated from margins by dark brown bands. Anterior median eyes larger than lateral eyes; anterior median eyes separated from each other by about the diameter of lateral eye, and from lateral eyes by length being smaller than half the diameter of lateral eye; anterior eye row slightly procurved; posterior lateral eye row about 1.4 times in length of posterior median eye row, which is longer than the distance between posterior median and lateral eye rows. Clypeus dark reddish brown, larger than the diameter of anterior median eye. Chelicera dark reddish brown. Maxilla reddish brown. Labium and sternum dark reddish brown, with light yellowish brown median band. Abdomen dark reddish brown in dorsal and lateral surfaces; a lanceolate median mark faint; ventral surface reddish brown, with distinct light yellow V-shaped line. Legs and palp reddish brown, with black markings on femora I-IV and palp; palpal tarsus with two claws. Epigynum with a long and narrow septum which is five-cornered in posterior parts (Fig. 49); a pair of spermathecae with long and narrow seminal ducts (Fig. 50).

Male (Paratype 1)

Measurements (mm). Total length 7.40. Carapace length 3.60, width 2.70. Abdomen length 3.80, width 2.10.

Leg	Femur	Patella & tibia	Metatarsus	Tarsus	Total
I	2.80	3.80	2.40	1.60	10.60
II	2.80	3.40	2.40	1.60	10.20
III	2.70	3.20	2.70	1.50	10.10
IV	3.40	4.20	4.20	2.00	13.80
Palp	1.40	1.20	—	1.50	4.10

Different from the female holotype as follows: Carapace dark brown, with faint median and lateral bands. Chelicera, maxilla, labium and sternum dark brown. Legs light yellowish brown in ventral surface of coxae and trochanters I-IV, and dark brown in dorsal surfaces of coxae and trochanters I-IV, and dark reddish brown in other segments I-IV; femora I-IV with many long straight hairs. Abdomen with many long straight hairs in all surfaces; ventral surface dark reddish brown. Palp dark brown, with many white pubescences on dorsal tibia; tarsal organs (Figs. 51-52) with a robust C-shaped median apophysis; tarsus with one claw.

Variation: Total length ♀ 6.35–8.80, ♂ 6.40–8.15. Carapace length ♀ 3.10–3.65, ♂ 3.30–4.25; width ♀ 2.50–2.80, ♂ 2.60–2.75. Abdomen length ♀ 3.25–5.20, ♂ 3.10–3.90; width ♀ 2.20–3.60, ♂ 1.75–2.30. In general, the male specimens are darker than the females.

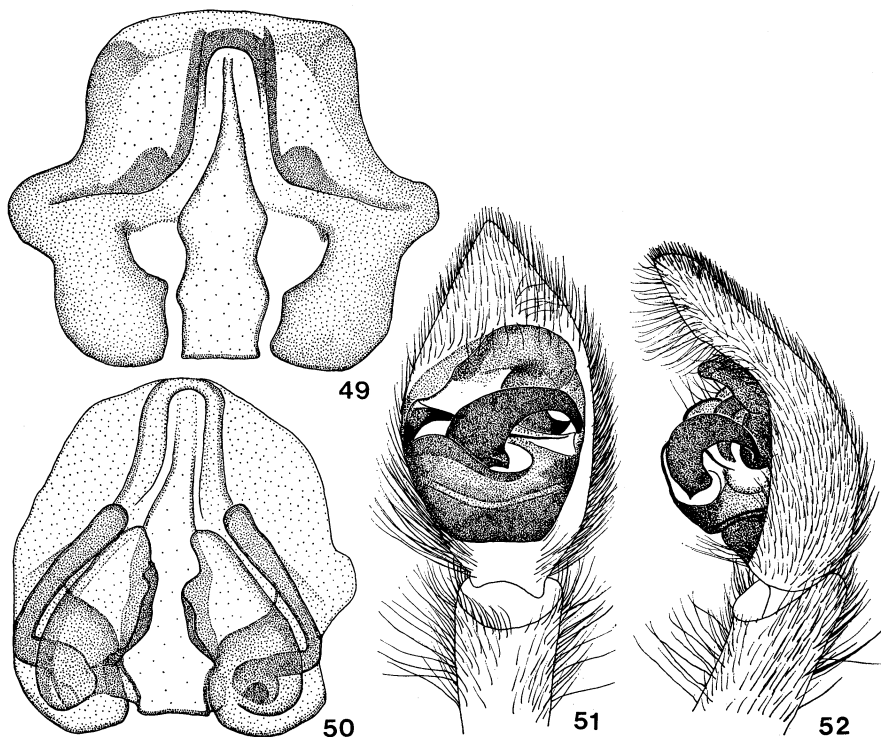
Holotype: ♀, Tomakomai Hokkaido, Japan, 15. VII. 1975 (M. SUWA).

Paratype 1: ♂, Tomakomai, Hokkaido, Japan, 27. V. 1979 (M. SUWA).

Paratypes: Hokkaido- 3♀, same data as holotype; 20♀, same locality, 29. VI. 1978 (M. SUWA); 10♀, 14♂, same locality, 27. V. 1979 (M. SUWA); 1♀, Kushiro, 3. VI. 1978 (S.-I. UENO).

Distribution: Japan (Hokkaido).

Biological notes: This species lives in moist places around the lakes or wet meadows. Mature males have been collected in May, and female from May to July. Formation of egg sacs is found late in May to late in June. The number



Figs. 49–52. *Pardosa suwai* n. sp. 49. Female epigynum (ventral view). 50. Female epigynum (dorsal view). 51. Male palp (ventral view). 52. Male palp (retrolateral view).

of eggs is 80 in one egg sac on the average.

Remarks: This species is allied to *P. uncifera* SCHENKEL from China in the shape of the female epigynum and male palp, but it can be distinguished from it by the presence of distinct light reddish brown lateral bands on the female carapace. This species is also similar to *P. astrigera* L. KOCH, occurring in Japan, Korea, and China, but is easily distinguished from the latter by the absence of the annulations on the female legs and by the presence of the tarsal claw on the male palp.

摘 要

田中穂積 (私立金光第一高等学校, 〒569 高槻市東上牧): 日本産コモリグモ科 (真正蜘蛛目) の新種。

日本から得られたコモリグモ科に含まれる標本に基づいて, 以下の13新種の記載を行った。

Pirata yesoensis (アングロコモリグモ), *Trochosa aquatica* (ナガズキンコモリグモ), *Arctosa fujiii* (フジイコモリグモ), *A. hikosanensis* (ヒコサンコモリグモ), *A. kawabe* (カワベコモリグモ), *Alopecosa moriutii* (ハタチコモリグモ), *A. hokkaidensis* (アシマダラコモリグモ), *Pardosa agraria* (イナダハリゲコモリグモ), *P. diversa* (ハタハリゲコモリグモ), *P. graminea* (クサチコモリグモ), *P. okinawensis* (リュウキュウコモリグモ), *P. umida* (ヒメコモリグモ), *P. suwai* (ヌマチコモリグモ)。

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